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## THE REGIONAL RANKING OF HUMAN CAPITAL DEVELOPMENT IN RUSSIA<sup>1</sup>

*This article examines the rationale for the importance and effectiveness of preparing the rankings of territories as a tool of regional socio-economic policy aimed at leveling the conditions for the socio-economic development of regions. It provides a methodological approach to determining the level of human capital development in the regions of the Russian Federation focused on identifying the quality of the human capital in each subject of the Russian Federation and the causes underlying the existing situation. The author presents a methodological apparatus based on the qualimetric method of indicative analysis, which allows to convert the diverse indicative figures expressed in different units of measure into a comparable type, obtain and differentiate the integrated assessments of human capital level in each subject of the Russian Federation based on the proposed classification of its conditions. The article provides the structure of indicators' system that models the human capital level by its descriptive components, including its demographic, educational, labor, research, and socio-cultural components. It was found that, in the vast majority of the subjects of the Russian Federation, a human capital is characterized by a predominantly low level of development. The author examines the positions of Russian regions ranked by their human capital level in 2013, presents the dynamics of changes in the human capital level across the Russian Federal Districts, as well as leaders and laggards in the ranking of the subjects of the Russian Federation in 2000–2013. The article provides the structure of integrated assessment of human capital level by presenting the assessments of its components. It establishes the classification of the subjects of the Russian Federation by taking into account the changes in their ranking, which allowed to identify four groups of territories: 1) Regions with consistently successful human capital level; 2) Regions with fairly high assessments in 2013 and, at the same time, significant advancement in the ranking during 2000–2013; 3) Regions with low assessments in 2013 and, at the same time, a significant decline in the ranking over 2000–2013; 4) Consistently unsuccessful regions.*

**Keywords:** human capital, human capital assessment, human capital level, indicator, threshold, normalized estimates, index, rating, ranking, Russian region, social and economic development

### Introduction

Today, the public is losing interest in determining the impact of economic processes on changes in the nation's quality of life assessed on the basis of macro-indicators averaged across the country. In the current conditions, we see the growing importance of measuring the level of regional well-being and assessing the human capital so that we can understand the differences in the people's quality of life between the regions of a country. For example, the Organization for Economic Cooperation and Development (OECD) launched OECD Better Life Initiative [1], a project which represents a wide-ranging study of the quality of life in 362 regions of 34 countries. An online interactive tool allows examining the level of well-being that includes nine areas, such as income, jobs, education, health, community, environment, safety and civic engagement, in a region and compare it with the indicators of other regions. According to OECD studies, the differences in well-being are often more pronounced between different regions within a single country than between different countries [2]. Such differences can lead to greater social spending, jeopardize social cohesion, and reduce the overall indicators of the country.

The regional well-being, quality of life or human capital, like the overwhelming majority of concepts used for analyzing the socio-economic processes, are integrated and multi-criteria categories, and they are usually described by a wide range of incomparable information. The diversity of information, in turn, substantially complicates any analytical procedures, and, therefore, the ranking becomes a tool for comparative analysis and critical comparative regulator in the socio-economic sphere.

Theory. As a technique used to compare and systematize the objects of socio-economic studies, the rankings currently have widespread use in virtually all sectors of public life, including the professional communities, agencies, corporations, stock exchanges, banks, as well as public administration

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authorities. At the same time, the use of rankings for comparative purposes is constantly accompanied by a number of criticisms [3, 4, 5, 6], such as those related to the initial data of questionable reliability, transparency of the system used to set the weights of indicators, correctness of aggregation methodology, abundance of subjective expert assessments, political bias, etc. However, in current conditions, no viable alternative has been proposed to this analytical tool, and after eliminating the reasons for objections expressed towards the ranking, it often remains the only way for becoming aware of, analyzing and measuring the developments in socio-economic sphere. As a result, today, the rankings built on an integrated assessment of various aspects found in the functioning of socio-economic systems estimated by the total range of heterogeneous criteria are widely used both at the global and local levels.

As a function of state regulation of the economy and a goal of state regional policy, the alignment of conditions and leveling of imbalances in the socio-economic development of the country is enshrined in the constitutional law of the Russian Federation. One of the relevant results of the work made by the Government of the Russian Federation in this area was the adoption of Methodology for Assessing the Effectiveness of Executive Branch Authorities [7] in November 2012. The assessment conducted by the Ministry of Regional Development of the Russian Federation<sup>2</sup> was used as a basis to rank the subjects of the Russian Federation by the total range of regional financial and economic indicators, including the assessment of companies and organizations, budgetary system, investment attractiveness, household income, and employment. The results of ranking were intended to describe the quality of regional administration and ensure a better consideration of imbalances in the socio-economic development of the country which, in turn, was supposed to help “to address more accurately the work on eliminating the differences in the economic development of the regions” [7, s. 3] by distributing more equitably the grants and stimulating the regions that had less financial resources.

As an alternative element for the mechanism of leveling the imbalances in the socio-economic development of the country, we propose the tools for differentiating the Russian regions by the level of development of their human capital. By “human capital” we mean a special form of capital that includes health, skills, abilities, knowledge, competence, and motivation for the productive work of individuals, which were accumulated in the course of vital activity (based on practical experience and as a result of investment), have an economic value and are being used towards the growth in the well-being of individual economic entities and overall national wealth. By “investment in human capital”, we mean the investment in social and cultural education, training, professional education of individuals [8].

The choice of human capital as an object of study on the level of regional development is determined by the strategic goal of national development stated in the Strategy 2020 to achieve a new pace and quality of economic growth. The new model of growth implies the orientation to the post-industrial economy, which is underpinned by the areas oriented towards the development of human capital (health, education, science, culture, and sports), while at the same time pointing out the necessity to build its new quality because “when we do not consider the natural wealth, it is in the area of human capital that are concentrated the main socio-economic advantages of Russia in the global economy” [9, p. 6].

The methodology proposed for studying the human capital is defined for and focused on addressing the task, which differs from the generally accepted and widespread tasks intended to provide quantitative assessment of the total human capital in a country or the amount of human capital in a company (organization) as a value of certain intangible assets expressed in monetary units. This study sought to define the qualitative level of human capital in the Russian regions, because understanding the condition of studied object at the considered point of time, the dynamics of its change over a retrospective period and, whenever possible, the trends of its future change are the essential information sources for the governance in the area of national socio-economic development.

**Data and Methods.** To address the formulated task, we selected an approach, in which the object of study is described by a set of indicative figures that model its condition. The difficulties in applying this approach, associated with designing the techniques for calculating such figures, their normalization, obtaining synthetic indicative figures and integrated assessment of the object's condition were addressed within the framework of the proposed methodological apparatus [10, pp. 77–99; 214–234]. The proposed method has undergone extensive testing on a range of similar tasks to assess the

<sup>2</sup> The Ministry of Regional Development of the Russian Federation operated in 2004–2014.

**Structure of the System of Indicative Factors (IF) for Assessing the Human Capital (HC) Level in the Regional Territories**

No.	Component of HC	Synthetic IF for Assessing HC level	IF of the System for Assessing HC level		
1.	Demographic Component	Synthetic IF for Human Resources Level	Rate of natural population growth		
			Share of population below working age in the general population		
			Population morbidity level		
		Synthetic IF for reproductive potential of the population	Life expectancy at birth		
			Overall mortality rate of the population		
			Mortality rate of the population before retirement age		
2.	Educational Component	Synthetic IF of population coverage by professional education	Specific number of students in institutions of higher education		
			Specific number of students in institutions of secondary vocational education		
			Specific number of students in institutions of primary vocational education		
		Synthetic IF of Human Capital in the Education System	Number of students per lecturer in institutions of higher education		
			Number of students per instructor in institutions of secondary vocational education		
			Number of students per instructor in institutions of primary vocational education		
		Synthetic IF for production of specialists by educational institutions	Specific production of specialists by institutions of higher education		
			Specific production of students by institutions of secondary vocational education		
			Specific production of students by institutions of primary vocational education		
		Synthetic IF for the Condition of Assets and Financing of Education System	Factor of fixed assets renewal in the education system		
			Degree of fixed assets depreciation in the education system		
			Investment in fixed capital of education system per student		
			Level of financing of education system		
		3.	Labor Component	Synthetic IF for Employment of Population	Share of economically active population in the general population
					Unemployment level
					Manufacturing employment share in total employment in the economy
Synthetic IF for performance of labor activity	GRP per person employed in the economy				
	Average salary to the cost of living				
Synthetic IF for education level of employed population*	Share of population with higher education in the employed population				
	Share of population with secondary vocational education in the employed population				
	Share of population with primary vocational education in the employed population				
	4.			Research Component	Synthetic IP for Research Capacity
Specific indicator of the number of researchers with the academic degree of Doctor of Sciences					
Specific indicator of the number of researchers with the academic degree of Candidate of Sciences					
Specific indicator of the number of graduate students					
Specific indicator of patent applications for intellectual property					
Synthetic IF for Performance of Research Activity		Specific volume of innovative goods, works, and services per person employed in the economy			
		Specific number of advanced manufacturing technologies created			
		Specific indicator of patents issued for intellectual property			
Synthetic IF for the Condition of Assets and		Factor of fixed assets renewal in the area of research and development			

*Ending Table 1 next page*

No.	Component of HC	Synthetic IF for Assessing HC level	IF of the System for Assessing HC level
5.	Socio-Cultural Component	Financing of the Area of Science	Factor of fixed assets depreciation in the area of research and development
			Investment in fixed capital in the area of research and development per researcher
			Share of internal expenditure on research and development in GRP
		Synthetic IF for the level of well-being of population	Average per capita household income to the cost of living
			Average amount of established pensions to the cost of living of pensioners
			Factor of income differentiation
			Share of population with income below the cost of living in the general population
		Synthetic IF for consumer preferences of the population	Average per capita consumption of alcoholic products
			Attendance at theaters and museums
		Synthetic IF for provision of population with socio-cultural facilities	Provision of population with sports facilities
			Provision of population with culture and leisure facilities

economic [11, 12], energy [13, 14, 15], socio-demographic [16, 17] environmental [18], and financial security [19] of the subjects of the Russian Federation.

The integrated assessment of the human capital level in a region includes the indicators which, in accordance with the analysis objectives, were grouped into five modules describing such components of human capital as the demographic, educational, labor, research, and socio-cultural components. Each component includes its individual indicators grouped into two, three or four synthetic indicators. The structure of the system of indicators is provided in Table 1 [10, p. 78].

The use of the indicative method for assessing the human capital level consists in determining the extent to which the values of indicators, achieved at the considered time or projected for the future, correspond to their thresholds. The threshold values are indicator values that meet the current requirements of public development (including in the developed Western countries) and ensuring the sustainable socio-economic development of regions by taking into account their existing conditions. The desired extent of conformity by the indicator values achieved at the considered time represents the assessment of human capital level, an indicator that provides an integrated evaluation of the level of its development in the region; or describes its qualitative condition for the considered indicator and a group of indicators with common properties, which characterizes one of its components. The indicators expressed in various physical units are normalized in accordance with a special method described in [10, pp 214–234]. The resulting Normalized Estimates (NE) are composite indexes for assessing the human capital level.

The assessments of human capital level can be categorized by qualitatively different levels as follows: Very Low (VL), Low (L), Satisfactory (S), M (Medium), Good (G), High (H), and Very High (VH).

### Results

The human capital level in the subjects of the Russian Federation was assessed by using Systemic Diagnostics of National Wealth in the Russian Regions, a computer program [20]. The official statistics provided by the Federal State Statistics Service of the Russian Federation were used as the initial data. Table 2 and Fig. 1 provide the results of assessing the human capital level in the Federal Districts of the Russian Federation for 2000–2013.

In 2013, the human capital level in most Federal Districts was still categorized as corresponding to the Low Level, except for the Central Federal District, which crossed the threshold (Fig. 1) of the next level (Satisfactory Level) under the classification of human capital levels as early as in 2011 (with NE equal to 1.378) and Northwestern Federal District (in 2013, its NE was equal to 1.393).

In 2001–2009, the Ural Federal District consistently held a leading position in terms of the human capital level. However, since 2010, it ceded its position to the Central Federal District. In 2013, the assessments of Northwestern District, Volga District, Ural District, Siberian District and Southern

Table 2

## The Results of Assessing the Human Capital Level in the Federal Districts of the Russian Federation

Federal District (FD) of the Russian Federation	2000			2005			2011			2013		
	NE	Level	Rank	NE	Level	Rank	NE	Level	Rank	NE	Level	Rank
Central FD	1.623	L	2	1.530	L	2	1.378	S	1	1.319	S	1
Northwestern FD	1.699	L	7	1.646	L	6	1.425	L	3	1.393	S	2
Southern FD	1.684	L	4	1.615	L	4	1.458	L	6	1.440	L	5
North Caucasus FD	1.782	L	8	1.724	L	8	1.590	L	8	1.654	L	8
Volga FD	1.608	L	1	1.548	L	3	1.449	L	5	1.416	L	3
Ural FD	1.635	L	3	1.496	L	1	1.415	L	2	1.459	L	6
Siberian FD	1.695	L	6	1.637	L	5	1.445	L	4	1.437	L	4
Far Eastern FD	1.687	L	5	1.654	L	7	1.503	L	7	1.504	L	7

Note: Hereinafter, the Level is the level of human capital indicators, such as VL (Very Low), L (Low), S (Satisfactory), M (Medium), G (Good), H (High), VH (Very High). NE is the Normalized Estimate. Rank is the rank of the territory among the Federal Districts of the Russian Federation. The lower is the value of Normalized Estimate and higher the rank, the higher is the human capital level.

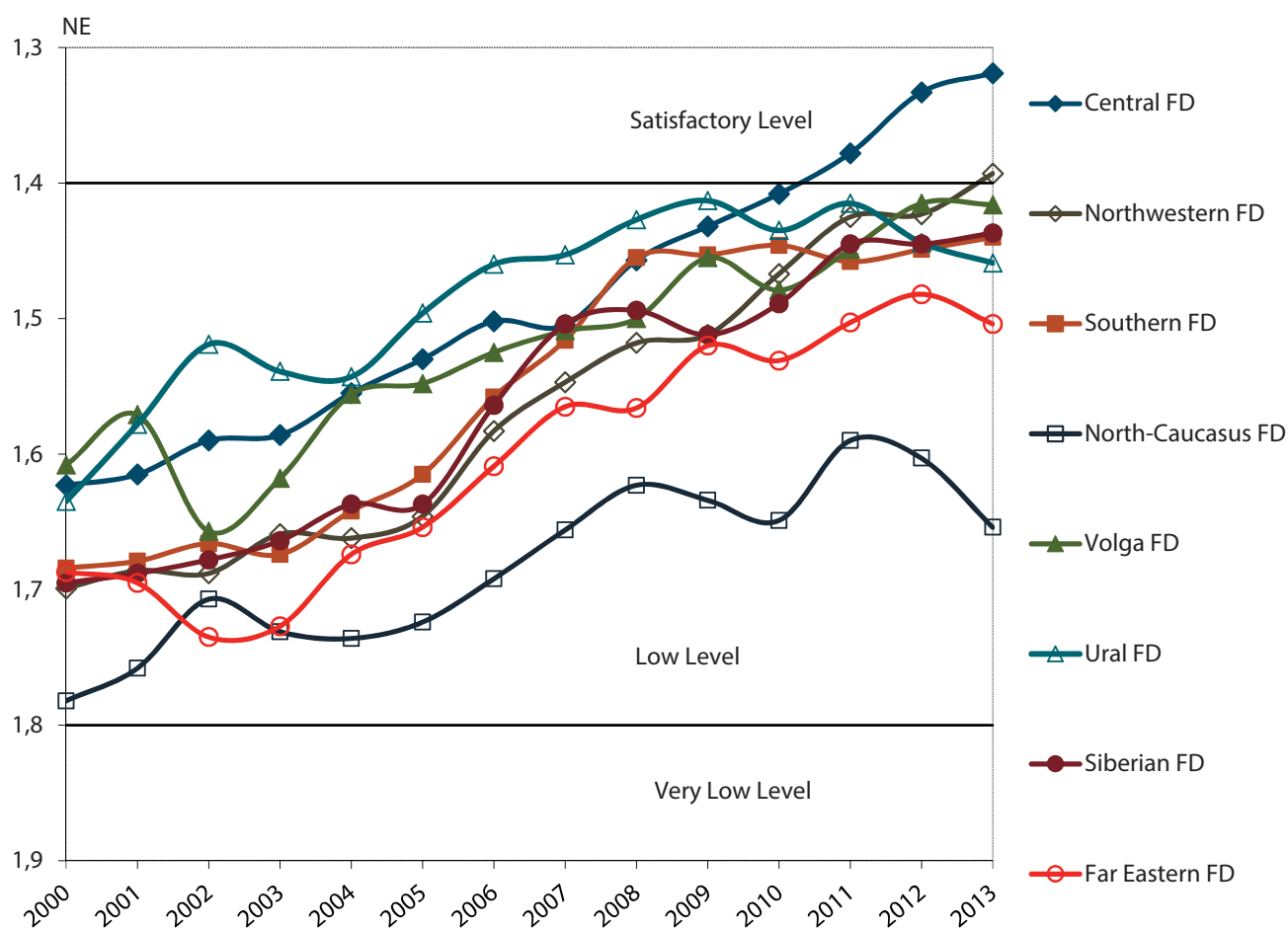


Fig. 1. The dynamics of changes in the human capital level of the Federal Districts of the Russian Federation in 2000–2013

District were very close (1.393–1.459); in 2000, the gap between the assessments was wider (1.608–1.699). It is noteworthy that, over the analyzed period, the spread of integrated assessments of human capital level decreased by approximately 30 %, which is well illustrated by the charts shown in Fig. 1. This observation indicates a trend towards some mitigation of regional disparities in the socio-economic development of the country.

Table 3 and Fig. 2 show the leaders and laggards in the ranking of the subjects of the Russian Federations by their human capital level.

In 2013, six subjects of the Russian Federation holding the top positions in the ranking had the human capital level described as Satisfactory (NE exceeded 1.4), while in 2007, there was no such



Leaders and Laggards in the Ranking of Subjects of the Russian Federation by their Human Capital Level

Fed. District	Subject of the Russian Federation	2000			2005			2011			2013		
		NE	Level	Rank	NE	Level	Rank	NE	Level	Rank	NE	Level	Rank
SFD	Tomsk Region	1.650	L	6	1.648	L	25	1.377	L	2	1.364	L	1
CFD	Kaluga Region	1.668	L	8	1.657	L	28	1.420	L	6	1.367	L	2
NWFD	Saint Petersburg	1.730	L	31	1.632	L	15	1.358	L	1	1.369	L	3
VFD	Perm Territory	1.706	L	16	1.553	L	3	1.409	L	5	1.373	L	4
SFD	Republic of Buryatia	1.718	L	23	1.637	L	17	1.518	L	26	1.390	L	5
UFD	Sverdlovsk Region	1.648	L	3	1.579	L	7	1.397	L	4	1.398	L	6
CFD	Kursk Region	1.740	L	34	1.644	L	22	1.532	L	33	1.404	L	7
SFD	Krasnoyarsk Territory	1.759	L	41	1.639	L	18	1.430	L	7	1.407	L	8
CFD	Moscow	1.710	L	19	1.605	L	10	1.445	L	8	1.418	L	9
CFD	Yaroslavl Region	1.723	L	27	1.648	L	26	1.526	L	28	1.423	L	10
CFD	Ivanovo Region	1.884	VL	79	1.841	VL	80	1.625	L	63	1.670	L	74
VFD	Kirov Region	1.830	VL	65	1.739	L	55	1.671	L	73	1.681	L	75
NCFD	Republic of Dagestan	1.837	VL	68	1.759	L	63	1.592	L	51	1.690	L	76
FEFD	Jewish Autonomous Region	1.881	VL	77	1.781	L	72	1.667	L	71	1.692	L	77
NWFD	Pskov Region	1.896	VL	81	1.817	VL	76	1.775	L	81	1.695	L	78
CFD	Tula Region	1.775	L	47	1.753	L	58	1.692	L	78	1.707	L	79
NCFD	Chechen Republic	n/a	n/a	n/a	1.850	VL	83	1.765	L	80	1.750	L	80
NCFD	Republic of Ingushetia	1.871	VL	75	1.849	VL	82	1.750	L	79	1.758	L	81
FEFD	Chukotka Autonomous Area	1.850	VL	71	1.771	L	67	1.844	VL	83	1.766	L	82
FEFD	Nenets Autonomous Area	1.868	VL	73	1.714	L	46	1.778	L	82	1.804	VL	83

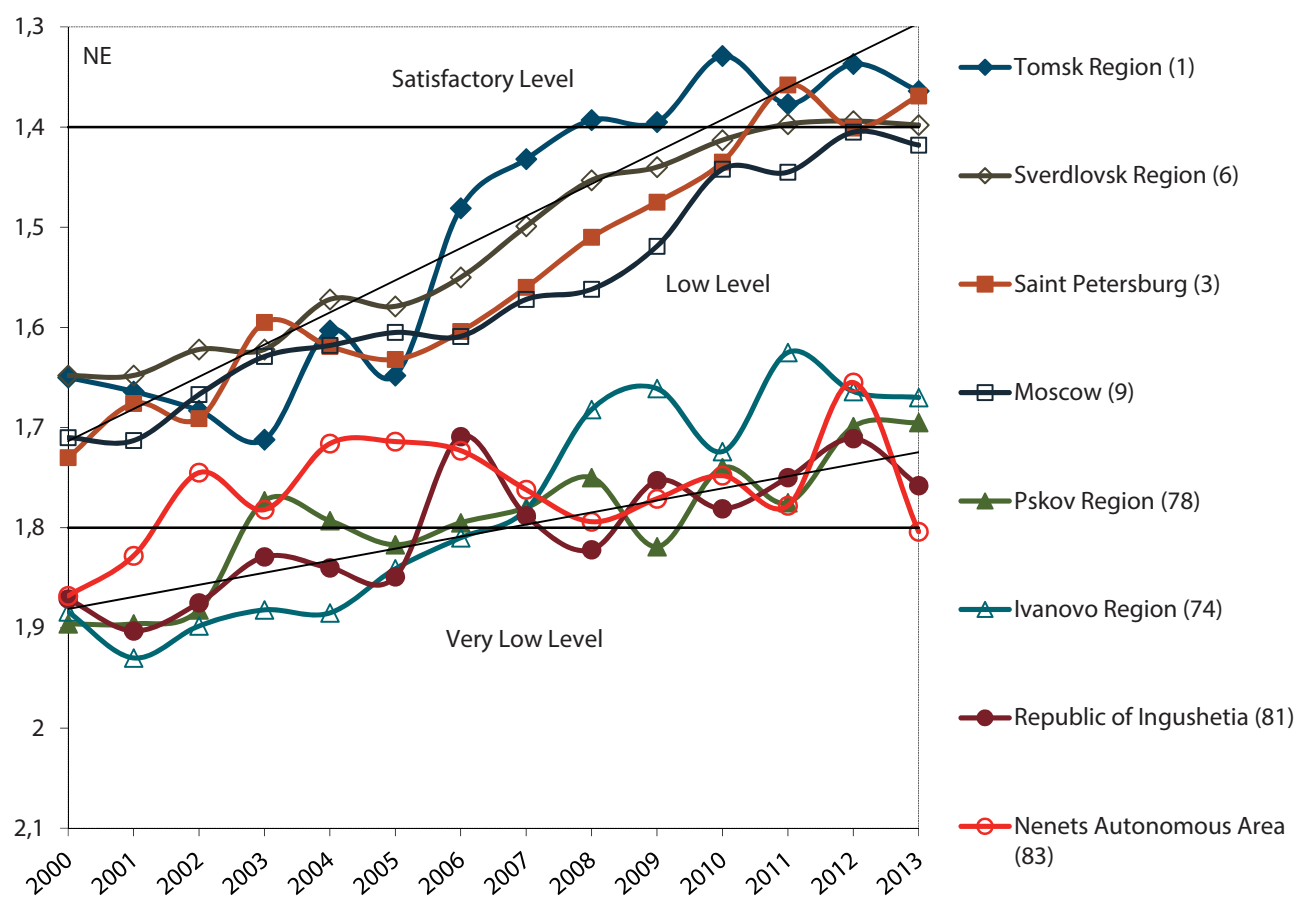
Note: CFD — Central Federal District; NFD — Northwestern Federal District; SFD — Southern Federal District; NCFD — North Caucasus Federal District; VFD — Volga Federal District; UFD — Ural Federal District; SFD — Siberian Federal District; FEFD — Far Eastern Federal District.

territory yet. As for the subjects of the Russian Federation holding the bottom positions in the ranking, in 2013, only Nenets Autonomous Area received a Very Low assessment (NE below 1.8) while, in 2000, there were 30 such subjects of the Russian Federation. The charts shown in Fig. 2 illustrate well the similarity between the dynamics of changes in the assessment of human capital level for the leaders and laggards in the ranking of the subjects of the Russian Federation.

As an example, Fig. 3 provides the structure of integrated assessment of the human capital level in terms of its components in some subjects of the Russian Federation for 2013, the analysis of which allows evaluating the contribution of demographic, educational, labor, research, and socio-cultural components of human capital to its integrated assessment. For example, in 2013, Tomsk Region was ranked 19th by its demographic component with an assessment score of 1.599 (which corresponds to Low Level), by its educational component the region was ranked 5th with the score of 1.462 (Low Level), by its labor component — 52nd (1.400, which is the threshold of Very Low level), by its research component — 14th (1.229, Satisfactory), by its well-being — 52th (1.064, Satisfactory). The integrated assessment of human capital level in Tomsk Region is 1.364, which corresponds to a top position in the ranking of subjects of the Russian Federation for 2013.

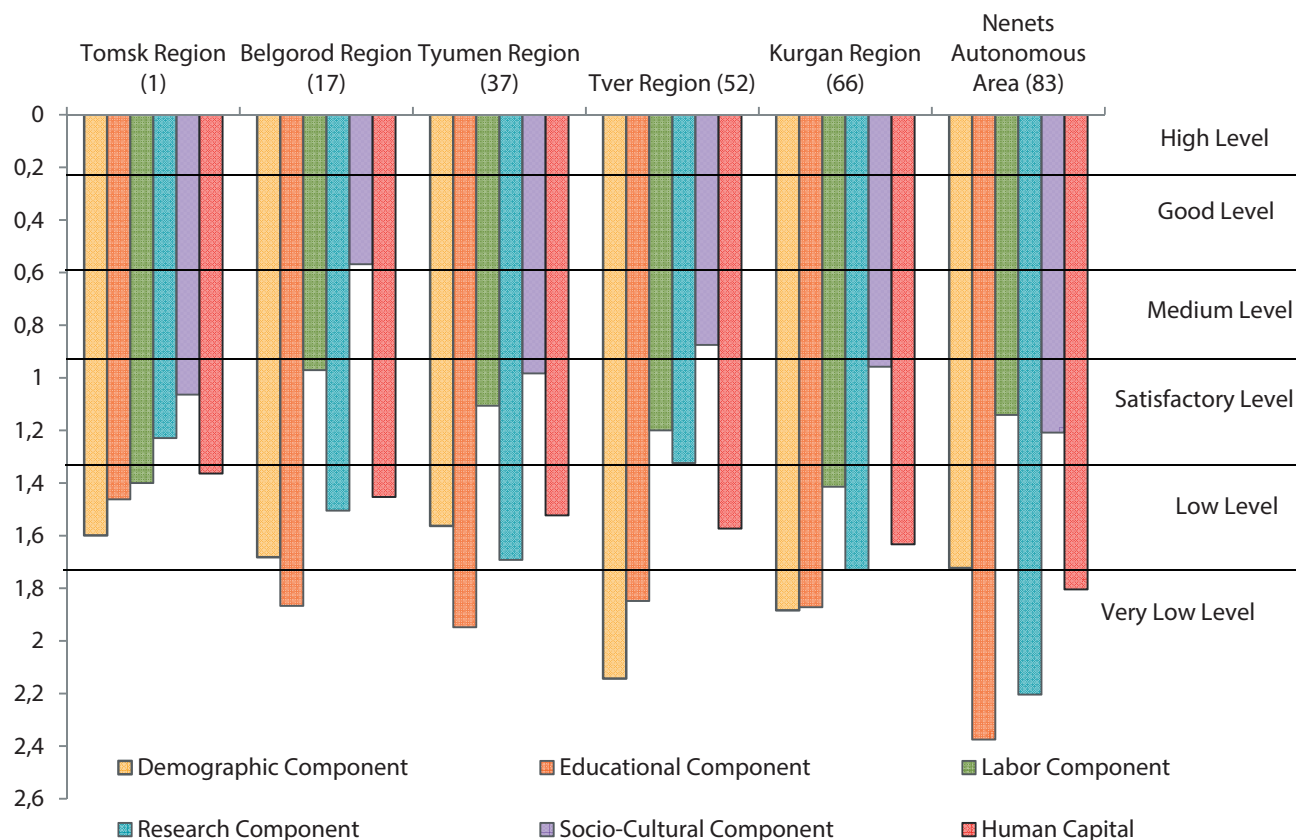
The provided calculations allow differentiating the subjects of the Russian Federation not only by the level of their human capital development but also by the dynamics of changes in their development during the period of study. All subjects of the Russian Federation can be conventionally divided into four groups:

— Group 1 includes the regions that are consistently successful in terms of their human capital level.



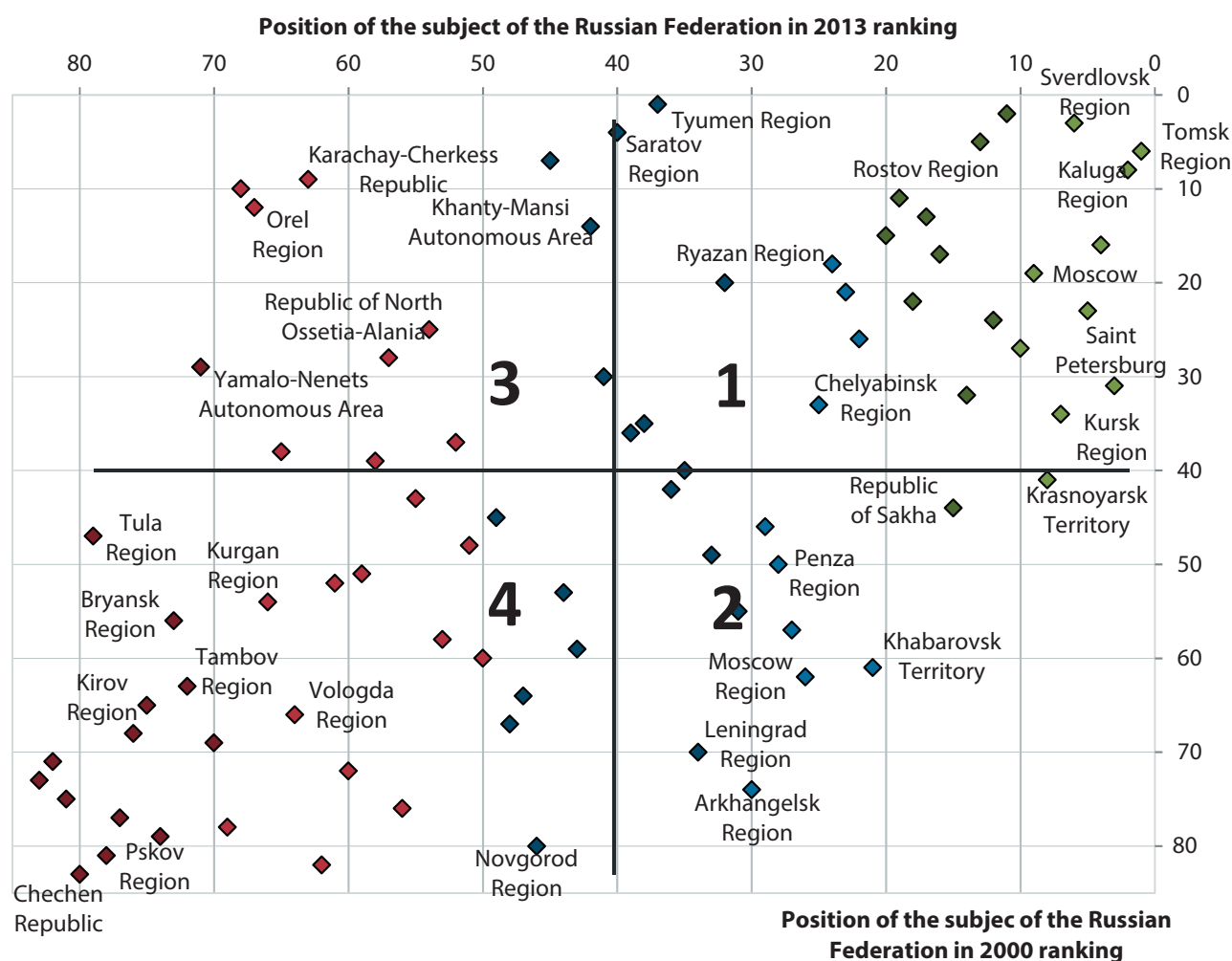
Note: The figure in parentheses indicates the rank of the subject of the Russian Federation by its human capital level in 2013.

**Fig. 2.** The dynamics of changes in the human capital level of leaders and laggards in the ranking of subjects of the Russian Federation for 2000–2013



Note: The figure in parentheses indicates the rank of the subject of the Russian Federation by its human capital level in 2013.

**Fig. 3.** The structure of integrated assessment of human capital level in terms of its components in some subjects of the Russian Federation for 2013



**Fig. 4.** The dynamics of changes in the integrated assessment of human capital level of the subjects of the Russian Federation in 2000–2013

— Group 2 includes the regions that received fairly high assessment in 2013 and, at the same time, significantly advanced in the ranking during 2000–2013.

— Group 3 includes the regions that received low assessment in 2013 and, at the same time, significantly fell in the ranking during 2000–2013.

— Group 4 includes consistently unsuccessful regions.

Fig. 4 shows the classification of subjects of the Russian Federation by the dynamics of their positions in the ranking of human capital level during the period of study.

The first group includes “successful” subjects of the Russian Federation, which in 2013 were ranked above 36th position and, in 2000–2013, primarily held the positions in the top half of the ranking, such as the Tomsk Region and Kaluga Regions, city of St. Petersburg, Perm Territory, Republic of Buryatia, Sverdlovsk Region and Kursk Region, city of Moscow, Yaroslavl Region and Voronezh Region, Republic of Tatarstan, Astrakhan Region and Belgorod Region, Republic of Komi and Republic of Bashkortostan, Republic of Kabardino-Balkaria, Rostov Region, Ulyanovsk Region, Novosibirsk Region, Nizhny Novgorod Region, Samara Region, Chelyabinsk Region, Saratov Region, Orenburg Region and Omsk Region, Stavropol Territory.

The second group includes the subjects of the Russian Federation, which were ranked 8th to 34th in 2013 and rose by 16–40 positions in the ranking during the period of study, such as Krasnoyarsk Territory, Republic of Sakha (Yakutia), Khabarovsk Territory, Moscow Region, Krasnodar Territory, Penza Region, Volgograd Region, Arkhangelsk Region, Primorsky Territory, Lipetsk Region and Leningrad Region, Chuvash Republic.

The third group includes the regions, which were ranked 37th to 79th in 2013, and fell by 11 to 58 positions in the ranking over 14 years (since 2000), such as Tyumen Region and Saratov Region, Udmurt Republic, Khanty-Mansi Autonomous Area, Republic of Mordovia, Tver Region, Republic of



North Ossetia-Alania, Kalmykia and Karelia, Karachay-Cherkess Republic, Murmansk Region and Oryol Region, Republic of Mari El, Yamalo-Nenets Autonomous Area, Tula Region.

The fourth group includes “unsuccessful” regions, which were ranked 43th to 83th in 2013 and, in 2000–2013, primarily held positions in the bottom half of the ranking, such as Amur Region, Kemerovo Region, Novgorod Region and Irkutsk Region, Republic of Adygea, Zabaykalsky Territory, Altai Republic, Kostroma Region, Sakhalin Region and Magadan Region, Kamchatka Territory, Kaliningrad Region, Altai Territory, Republic of Khakassia, Vladimir Region, Vologda Region and Novgorod Region, Republic of Tyva, Tambov Region, Smolensk Region and Bryansk Region, Jewish Autonomous Region, Ivanovo Region, Republic of Dagestan, Kirov Region and Pskov Region, Republic of Ingushetia, Chechen Republic, Chukotka Autonomous Area and Nenets Autonomous Area.

## Conclusion

1. The analysis of human capital level in the subjects of the Russian Federation during 2000–2013 allows seeing that the uneven character of the development of regional socio-economic systems is largely caused and pre-determined by regional differentiation in the development of national human capital.

2. The analysis of conducted ranking and its components is aimed at providing the opportunity to develop an individual approach to formation and management of human capital for each subject of the Russian Federation. The proposed ranking will allow elaborating the following:

— Achievable targets and priorities for socio-economic development of the regions, which provide for the most efficient use of own resources and reserves for increasing the human capital of each region by taking into account its particular characteristics;

— Ways for optimal development of human potential in each region in order to optimize the socio-economic development of Russia in general, which implies to reduce the extent of socio-economic disparities between the regions and improve the quality of life of their people.

3. Assessing the human capital in the region is an indispensable element in the system of managing its socio-economic development, which, obviously, does not in itself solve the management tasks. However, the information provided in the ranking and expressed in quantitative assessments of key areas in the vital regional activities provides a substantial support for managerial decision-making by the authorities involved in the administration of regional development as it raises the awareness of specific problems and identifies the relative strengths and weaknesses of the region in the area of human development, allows to monitor and compare trends in other regions, which may become the guidelines in setting the priorities for socio-economic policies.

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